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ABSTRACT

Although most programs in technical communication reside in English departments where the focus is on writing, rhetoric, and exposition, the graduate certificate program in interactive multimedia at Mercer University is being developed for the Technical Communication Department within the School of Engineering. As a result, many of the restrictions, myths, and rhetorical paradigms that may hinder other programs in English departments do not hinder the program's developers. The Master's Degree program in technical communication is composed of a series of modules of 3 courses each. The graduate courses emphasize practical computer-based and process activities for working professionals that closely simulate research and development work in industry. Multimedia consists of 3 layers: time-space constrained multimedia applications, time-constrained multimedia, and interactive multimedia. Within interactive multimedia, there are 3 types of content: structured pathways, exploratory, and gaming or simulation. The framework for the graduate certificate focuses on the analysis and design of "structured pathing" and "exploratory" applications. Benefits of the program to working professional students include: advanced, practical approach to multimedia and hypermedia application planning and design; linking academic and industry perspectives; real-life research and development projects related to corporate needs; and instructors with both academic and industry experience. (Contains 13 references.) (RS)

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Mercer University's Graduate Certificate in Interactive Multimedia

ED 385 879

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Mercer University, School of Engineering, Atlanta Campus, is offering during the 1994-1995 academic year a graduate certificate program of three course in Interactive Multimedia, which can be applied toward a planned Master's Degree in Technical Communication. The graduate certificate is for working professionals looking to acquire advanced knowledge and practical skills that they can apply directly to their job activities in industry. Course work is PC-based and process-oriented.

INTRODUCTION

Many of you are aware that most graduate and undergraduate programs in Technical Communication in the United States have originated from Schools of Humanities and Social Sciences, and more often than not have resided within traditional English Departments. In this environment, the creators of the programs have had to establish their courses of study within the context of somewhat restrictive paradigms that center on writing, rhetoric, and exposition. Over a period of time, the field has evolved to encompass many cross-disciplines, including Information Sciences, Library Science, Communication, Graphics & Visualization, Instructional Design, and Film & TV, among others. This is especially true as we approach the age of Multimedia communication technology. Slowly but surely, Technical Communication programs extant in more traditional university departments, like English, have been able to progress along the path that industry has previously paved.

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I have witnessed first hand the academic struggles associated with this evolution of the field. While an Assistant Professor at Georgia Institute of Technology, I proposed and put together a Master's Degree Program in Technical Communication and taught a pilot course over a dozen years ago. At that time, I was met with indifference by colleagues in the English department, who envisioned the field as little more than a discipline somewhat akin to Freshman Composition that focused on letter and report writing. I moved on to develop and teach courses and provide consulting to IBM Corporation and their customers on the information development process, usability, and online information. At Georgia Tech, a dozen years later, after several transformations in the department, now called Language, Literature, & Communication, a colleague has started last year a Master's degree in Information Design & Technology.

Primarily within English Departments, I have also had the opportunity to develop and teach graduate technical communication courses at the University of Tennessee at Chattanooga, and have provided advice and consultation to Southern Tech on the Master's program, to Kennesaw College on the undergraduate program, to Mercer University on the undergraduate program, and most recently have developed the graduate certificate series leading to the proposed Master's degree at Mercer University.

The experience at Mercer University has been a most happy circumstance for a number of reasons especially because the programs/courses have been developed for a separate Technical Communication Department within the School of Engineering. As a result, many of the restrictions, myths, and rhetorical paradigms that may hinder other programs in English departments did not hinder us. We have been and continue to be able to move ahead and incorporate quickly industry needs and requirements, as they evolve, to help our customers, the working professionals, keep up with the power curve and pace of change that continues unabated in our technological work environment.

THE MERCER UNIVERSITY ENVIRONMENT

Mercer University is a private college founded in 1833 with its main campus in Macon, Georgia, where it has a broad-based curriculum in business, engineering, and liberal arts on both the undergraduate and graduate levels, plus a Medical School and a Law School. The Engineering School opened on the Macon Campus in 1985. In Atlanta, Mercer University has its graduate and professional schools in Pharmacy, Business, Engineering, and Education. The Engineering School which opened in Atlanta in 1992 offers Master's Degrees in Electrical Engineering and Engineering Management.

Undergraduate Program, Macon

Within the School of Engineering in Macon, the Technical Communication Department offers an undergraduate Technical Communication degree that draws on the strengths of its Engineering locale. In addition to the Technical Communication courses, students are required to take courses in one cognate area, such as computer science, engineering, or business. The undergraduate program also requires a foundation in mathematics, science and engineering, so that the students have a technical and scientific background in addition to their communication skills.

Everything the students do is computer based. They are able to use both Macs and PCs. They also work in teams on projects as they would in most industry environments. They have a strong grounding in writing, but they also develop skills in presentations, document design, instructional writing, visual communication, and other types of communication skill sets. They also complete either an internship or a two quarter senior design project to graduate. Currently, 100% of the graduates of the undergraduate program have obtained employment within three months of graduation.

Graduate Program, Atlanta

At the graduate level, we are building on the Atlanta Campus a Master's Degree program in Technical Communication that is composed of a series of modules of three courses each. The first module offered last year is in Technical Communication Management. It comprises three courses including:

1) Managing the Information Development Process,
2) Managing the Usability Evaluation Process, and
3) Managing the Online Information Process.

A primary goal of the graduate courses is to emphasize practical computer-based and process activity that closely simulates research and development work in industry. Graduate students use the PC Lab or the Multimedia PC Lab, both of which have donated and purchased software tools for use on course projects. Work is performed individually and in teams.

The graduate course structure provides maximum flexibility to the working professional desiring further graduate work in advanced areas by allowing him or her to select one or more graduate certificate modules. An individual can thus take one module and obtain a graduate certificate in that area, or take multiple graduate certificate modules to apply toward the Master's Degree. The typical graduate student profile has approximately 10 years work experience (3 years required) and at least a bachelor's degree (3.0 or above average) in a related area.

Thus, at both the undergraduate and graduate levels, Mercer University, within its School of Engineering, has been able to respond with speed and quality to the needs and demands of industry and the working professionals industry employs by the tens of thousands in the field of Technical Communication. A prime example of this response is our new Graduate Certificate in Interactive Multimedia.

THE INTERACTIVE MULTIMEDIA GRADUATE CERTIFICATE

What is Interactive Multimedia?

Given all of the media attention to the Information Superhighway and the manifold multimedia content and services it can distribute, Interactive Multimedia in its various forms is an area of great interest in our discipline of Technical Communication and in other related disciplines. There is no question that in computer software design, the user interface is evolving from the character-based, to the graphical-based, to a multimedia-based format. In our field of technical communication, paper documentation is evolving into online documents, which is further evolving into hypertext and hypermedia applications. In the related field of training, stand-up training with exercises is evolving into computer-based training, which is further evolving into interactive multimedia training applications.

As elaborated in a book manuscript currently in review, entitled ***What is Multimedia?*** (by Dr. Patrick Dillon and Dr. David Leonard), there are three layers of Multimedia:

Layer 1: Time-Space Constrained Multimedia Applications

These are applications in which there must be space-and-time-bonding between the two communicating parties; i.e., the presenters/producers of the application must be in the same place at the same time as the consumer audience. The intended consumption of the application requires that both presenters and the audience be in the same place at the same time. An example is a speaker support system used by a salesperson, who is making a presentation to a prospective client. Unlike more traditional applications, this application potentially would include text, graphics, sound, photos, and interactive video.

Layer 2: Time-Constrained Multimedia

These are applications in which there must be time-bonding between the two communicating parties, but not locational-bonding. Both the act of communicating and the act of consuming demand that the two parties come together at the same moment in time, but not in the same location. An example is a videoconferencing system. These systems are beginning to be used by corporations to disseminate information or provide training that allows two-way communication between a headquarters site and its various field locations.

Layer 3. Interactive Multimedia

These are applications in which no space-and time-bonding is required. By its nature, the application allows for the user or audience to consume the product at will, without regard to location in time or space of the application producer. An example is Compton's Multimedia Encyclopedia.

Within Layer 3, there are three types of Interactive Multimedia content. They are as follows:

Structured Pathways.

This is the oldest, most widely employed, and most primitive form of interactive multimedia. It is characterized by the following attributes: tutorial style of instruction, a single dominant path through the content, comprehension level and task level objectives, textual data followed by short online exercises, expository segments punctuated by multiple choice questions, and shallow branching opportunities, with scope and sequence determined entirely by the authors of the application.

An example would be a training tutorial used in industry to teach people how to use a business software application. Its immediate predecessor is CBT, Computer-Based Training.

Exploratory.

This is characterized best in Hypertext and Hypermedia applications. Its attributes are a relatively large volume of content, a wide variety of pathways through the content, a high degree of user control based on his or her preferences and choices. Exploratory applications maximize learner mobility, foster learner initiative, promote discovery learning, and encourage use of multiple search and retrieval strategies. The negative aspect of exploratory applications is that they often lack pedagogical controls. There is no way of tracking how the user is doing. When poorly or inadequately designed, they are merely electronic page turners or browsers.

An example would be Microsoft's *Complete Baseball*. Its immediate predecessor is Online Documentation.

Gaming, Simulation.

This is an application in which an imaginary world is created to engage the user. It is typically based upon a central challenge, dominated by author-controlled, performance-based interactions in which there is frequent user feedback. These types of applications, which are the most sophisticated form of interactive multimedia, make extensive use of performance tracking systems. A gaming application is often very lifelike and seeks to simulate cultural and physical aspects of the real world. When done well, gaming applications achieve high levels of verisimilitude and believability. They typically help learners exercise high level problem-solving skills.

An example of a gaming application is *SIMCITY* by Maxis, in which players build and manage a city through several decades of existence. An example of a simulation application is a defense department War Game, in which simulated tank battles occur to train combatants on how to wage war in the Saudi desert. These applications are not cheap to develop. Unlike structured pathing applications, where control of the learner's movement is great and therefore highly predictable, it is hard to predict where users will end up in gaming or simulation application.

The Framework for the Certificate in Interactive Multimedia

The framework for the graduate certificate is based upon the paradigm developed by Drs. Dillon and Leonard espoused in ***What is Interactive Multimedia?*** The focus of the courses is thus on the analysis and design of ***Structured Pathing*** and ***Exploratory*** applications.

Addressing ***Gaming and Simulation*** would require an advanced set of courses in Interactive Multimedia that may be a follow-on to the current set of three courses that comprise the certificate.

Thus, the three courses we are currently offering beginning this Fall are as follows:

TCO 615. Interactive Multimedia: Analysis

This course focuses on an analysis of the intellectual framework, enabling technologies, and planning strategies associated with Interactive Multimedia and Hypermedia projects. Students will learn about three basic models: Structure Pathing, Exploratory, and Gaming/Simulation applications. (4 graduate credit hours)

TCO 620. Design of Structured Pathing Applications

This course focuses on creating a prototype for interactive multimedia using the structured pathing model. Students will research the use of this model in industry applications and will create a design statement document with preliminary script outline. (4 graduate credit hours)

TCO 625. Design of Hypermedia Exploratory Applications

This course focuses on creating a prototype for the design of hypermedia exploratory model applications. Students will research the hypermedia exploratory model and create a design statement document with preliminary prototype outline. (4 graduate credit hours)

Benefits of the Graduate Certificate in Interactive Multimedia

The benefits of the program to the working professional students include the following items:

1. Advanced, practical approach to multimedia and hypermedia application planning and design that goes beyond just a basic introduction.
2. Linking academic and industry perspectives with business-oriented projects
3. Designed to take an product development process perspective. Yet, the courses are not just for managers. They are also for Multimedia Project Leaders, Implementers, Self-Managed Communication Professionals
4. Real-life research and development projects related to corporate needs
5. Use of PC Multimedia hardware (486 DX2 66) and Windows-based authoring software (*Asymmetrix Multimedia Toolbook 3.0*) technology
6. Instructors with both academic and industry experience, who are publishing refereed books in the field of Interactive Multimedia.

CONCLUSION

We are excited about the Mercer graduate certificate offerings and the implementation of our Master's degree approach to the benefit of the working professionals we serve. They are our customers who demand a meaningful, high quality product. Our primary job is to satisfy their requirements, not to fulfill the demands of the traditional academic discipline out of which we have evolved.

We are happy to have a home within the School of Engineering. And we look forward to continued graduate certificate development activity: 1) to meet our customers needs, 2) to provide an environment that helps advance the research and development aspects of their jobs, and 3) to help move the field of Technical Communication forward down the path of interactive information development.

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BIOSKETCH

David C. Leonard holds a Ph.D. in English with a specialization in Technical Communication from the University of Maryland. At Mercer University, he is currently Associate Director, Engineering Graduate Programs, Atlanta Campus, as well as an Associate Professor in the Department of Technical Communication, School of Engineering, Atlanta. Dr. Leonard is building for Mercer a series of graduate certificate modules leading to a Master's degree in Information Development. Previously, Dr. Leonard has developed undergraduate and graduate programs/courses at the Georgia Institute of Technology, the University of Tennessee at Chattanooga, and the University of Maryland.

In Industry, Dr. Leonard is co-owner of IDC Information Design Corporation, a twelve year old consulting firm specializing in computer hardware and software usability. Having worked with nearly 100 Fortune 500 and other firms, Dr. Leonard's company specializes in User Training and Documentation, Multimedia/Hypermedia, Online Documentation, Usability Evaluation, and Process Methodologies. As a consultant to IBM Corporation, Dr. Leonard served as a co-founder of the IBM Multiples Marketing Program, a national and international program that provides computer hardware/software development consulting expertise to IBM clients. Several years back, Dr. Leonard was also the outside consultant for IBM's Atlanta Usability Evaluation Laboratory, at the time one of the first of its kind in the country.